DOLPHINS PORPOISES

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(Different labels THANK YOU FOR YOUR INTEREST IN THE
XXX

the
The Dolphin, ~~The~~ Porpoise, and the Whale

~~A big cetacean~~

A big cetacean is called a whale. A little cetacean is called a dolphin, or a porpoise, unless it is going to grow up to be a big

cetacean, porpoises are smaller than dolphins, and have different
and we will get around to the differences between dolphins and
snouts and teeth
porpoises later. The study of whales, dolphins and porpoises is
These are facts of terminology from cetology, the science
cetology, and this ~~little pamphlet~~ leaflet is meant to provide a few facts on
of whales, dolphins and porpoises
cetaceans for laymen/who write to our Institute.
or people from other fields

D&P 20

Since ~~[illegible]~~ it goes to a man's credit if he is first to name a species, there are ~~undoubt~~ probably more names than there are species in most branches of the living world. This is ~~such~~ true of the cetaceans.

The Dolphin, the Porpoise, and the Whale

~~Acbig~~

A big cetacean is called a whale. A little cetacean is called a dolphin or a porpoise, unless it is going to grow up to be a big cetacean. The study of whales, dolphins and porpoises is cetology.

That, and other facts of basic cetology, constitute the gist of this paper. People being more and more dolphin-conscious (which we think is a good thing, dolphins being a ~~speciality of ours~~ specialty of ours,) we are here presenting some basic facts about these creatures, in perspective. ~~Incidentally we want to~~ Because we have many requests for information that bear signs of youth, or show that the writers are ~~hazy~~ a little hazy on biology, ~~on some basics of biology, we will also~~ we will also explain something about their position in the universe of life. Finally, we want to ~~and~~ also clarify what people ask us ~~mos~~ about most often, the difference between the dolphin and the porpoise.

The first thing you should know is that a dolphin is a cetacean, ~~pronounced~~ ~~pronounced~~ pronounced "setayshun." A dolphin is a cetacean, just as a rat is a rodent and a kangaroo is a marsupial. The cetaceans (English word) are members of the order cetacea (Latin name,) just as rodents are in the order rodentia and ~~marsupials~~ the marsupials are in the order marsupia. An order, like ~~classes~~ the other levels of classification in biology (for instance, class and species), is a category of creatures

with ancestors in common, who usually share,
by their heredity, many of the same techniques of adaptation.

The dolphin, ~~the~~ the porpoise and the whale are all cetaceans, and in fact constitute all the cetaceans that there are. They are all, of course, mammals. ~~They live~~ While everybody seems to know this, a person idly thinking, "Ah, yes, the whale is a mammal," tends to forget what it means to be a mammal -- ~~ifx~~ even though his own entire life is structured around being a mammal himself. ~~The~~ Mammalian life is like no other. Because the ~~The~~ infant is born ~~completely~~ quite ~~rather~~ helpless, ~~so that~~ ~~and~~ instincts and social organization have to provide for his care ~~for~~ during the weeks, years or ~~(in our case) decades~~ (in the case of human beings) decades ~~the weeks or decades~~ it will take for him to become self-sustaining. A new mammal arrives in the world alive and breathing, ~~alive,~~ rather than as a ~~faceless~~ (with a couple of exceptions) faceless egg, and lives on milk for the period of greater helplessness.

~~The long w~~
~~Individuals~~
~~In the larger mammals, relations~~

The social association of the ~~larger~~ mammals-- ~~wh~~ whether in the nurturance of the young, mating or even "friendship" relations-- is characterized by much more behavior we can ~~might~~ call "playful" or "affectionate" than non-mammals. Personalities are more distinct. ~~And, especially in larger mammals, m~~ Mating tends to be for ~~life~~ long periods. Communication patterns are less instinctual, more idiosyncratic, ~~to take on idiosyncrasy~~ ~~and, be increasingly calculated, pam~~ ~~especially for~~ and for at least one species, involve many precise calculations. ~~be extremely calculated.~~

Cetaceans are unique among mammals in that they live in the water and have their noses on top of their heads. They are by no means ~~ex~~ In particular, the only order of aquatic mammals. There are ~~also~~ the orders ~~There is also the order~~ pinnepedia (seals, walruses, sea lions,) and sirenia (sea-cows,) which are not much more related to the cetaceans than we are. There are also many borderline cases, like the hippopotamus, polar bear and otter, but these ~~they~~ are still dry behind the ears, so to speak.

Unlike fish, ~~they~~ an aquatic mammal must (of course) breathe air, and, also unlike fish, ~~they~~ their tail fluke is horizontal. ~~(Remember)~~ (The fish remains ~~at~~ generally at one depth, while the cetacean must roam through many.)

The study and description of the types of living creatures goes by several different names. "Typology" refers to setting up a systems of types, and trying to ascertain where a given specimen fits in. "Taxonomy" is about the same thing, or perhaps a little more general. "Systematics" is probably the most elegant word, since it has connotations of attempting to chart the histories and interrelationships of species. Thus it borders on evolutionary theory and Ecology, the study of environments and their constant balancing, upheavals and re-balancing.

The Latin names of plants and animals, which ~~confusing~~ to laymen seem pompous or perplexing, have a vital place in the systematics of biology. These names classify creatures within the Linnaean system of classication (pronounced "lin-ee-an",) developed by Carolus Linnaeus in the 18th Century.

~~It works like this: the name of each species is~~

This system has a specific method of naming every strain of plant or animal, whether living or fossil. ~~In this system~~ Every species has a name which is two words, the first being ~~its Family~~ its Genus, a grouping containing several species. Sometimes both names are the same, as with Rattus rattus and Gorilla gorilla, ~~and you can guess what they are~~ ~~both of whom you can guess~~ whose ~~English~~ common names you can surely guess. In strict scientific notation ~~the name of the~~ these two names of a species ~~is~~ are italicized or underlined, the first is capitalized,

and a third name is added, both for credit and for clarity-- the name of the ~~man who~~ ~~xa~~ man who named (or discovered) the species. (One result of this is that in many orders there are more names than species.) For instance, the reader is presumably a member of the species Homo sapiens Linnaeus. There are larger categories, containing successively larger groups, but for convenience they are not included in the species name. Thus you, a member of the species H. sapiens, ~~is~~ are also a member of the

~~family Hominidae, the Infraorder Catarrhini, the S~~

~~Family hominidae, the Infraorder Catarrhini, the Suborder~~

~~Anthropoidea, the O~~

family hominidae, the infraorder catarrhini, the suborder anthro- ~~Fax~~ poidea, the order primates, the infraclass eutheria, the subclass theria, the class mammalia, the subphylum vertebrata, the phylum chordata, and the animal kingdom.

Note that there is nothing sacred or fixed about the number of levels. Biologists since Linnaeus have found that to be about the right number to express the differences and similarities that they want to put into the classification system. But note that the differences between levels, and the exact meanings of each of the levels, are not very precisely fixed. For instance, some biologists don't call two groups different species if they can interbreed over several generations; others think ~~different species~~ the term species can sometimes be allowed for populations that are breed together. For ~~on the other hand, others follow Linnaeus~~

For instance, some biologists follow Linnaeus in calling the African Negro Homo afer, not H. sapiens, even though the people called "Negro" in the United States are often genetically closer to white.

~~But~~

No ¶ This disagreement is evidence of the best feature of the system, its correctability. ~~Scientific opinion, Wt With the grown growth of~~ As scientists put together evidence on different species and their ~~evidence on the relationships between~~ relationships, the classifications change; ~~and~~ so that often the species are given different names by different people. ~~Hence~~ We can see, then, ~~that classifications~~ that biological systematics are not just classification; they are an empirical study that proceeds hand in hand with the other studies, like anatomy and paleontology, that make it possible. Its problem is to isolate natural classifications.

One of the important features of this system~~x~~ is its tie-in with studies in evolution: ~~Similar~~ names are given/to all ~~extinct~~ fossil species that ~~xxxxx~~ are found, in the same way ~~x~~ However, this ~~x~~ has a catch in it: evolution is a slow process, one species does not abtruptly become another, and there can ~~be~~ never be a name for every in-between ~~state~~ species-- say, between the primitive carnivore and the modern dog.

This brings us ~~thx~~ to the theory of evolution. Calling it a "theory" misleadds some laymen into ~~xxxxxxxxxxxx~~ thinking it is only some tentative, giddy idea, while in fact it is more firmly estagblished than any other set of ideas in biology. It is called a"theory" ~~xxx~~ because it is a large set or/ ideas or propositions, and not just one or two.
There are still people who do not believe in it, largely out of ignoraxnce.
The biologist finds it astounding ~~that there are still people who do~~ to hear a lunch-counter argument where someone says, "Evolution ~~not believe in evolution, despite~~ is impossible-- a giraffe can't turn into an elephant,can it?"

Of course not. ~~Sxxxxxx~~ But beasts that were slightly ~~like giraffes~~ different from elephants did become several different kinds of elephant, ~~(but not quite) have evolved into giraffes, and giraffes may be evolving~~ and whole breeding-groups of ~~xxx~~ elephants in turn may be~~x~~ changing, ~~xx~~ generation by generation, into ~~something different~~ a different elephant than they were ten thousand years ago. Evolution is constant. The characteristics of species are always changing, sometimes ~~shifting~~ drifting back and forth just a little in a stable pattern. Evolution is a ~~x~~process of random change being directed by environmental pressures, much like a blindfolded ~~child~~ ~~boy being jostled around by playmates he is trying to catch.~~
pledge ~~a~~ trying to avoid being paddled.
at a fraternity initiation
child trying to avoid being poked in some game - teased

A way of existing that affords the species a living is called a
~~Many creatures are designed just right for their particular~~
niche. For example, the ~~xxx crocodile bird~~ an anteater's niche involves
~~style of adaptation; for instance, the anteater~~ ~~At most any change~~
eating ants, and related activities.
~~in the~~
~~Many niches are very exact, we have very exact~~
~~In some cases it is easy to imagine a creature whose~~

~~Some creatures have niches that involve very close tolerances~~

~~In~~ Many niches, such as hopping in trees or guiding other creatures to honey,

An animal which is not quite adaptad to the niche of its parents is not likely to survive, ~~xxxxxxx~~ or if it does, is not likely to have much genetic effect on its breeding stock. Sometimes, however, it has a skill or ability ;that begins to fit it for another way of life and also increases its chances of survival,/ like, say, the long-ago cheetah that was just a little faster. ;If it lives to mate, ~~x~~ then the species will have drifted just a little in that direction.

Often a species will be stable in a ~~x~~ niche, in that every kind of change that accident "proposes" is less ~~xxxxxx~~ likely to flourish than the previous pattern. And often the species will have prssure to evolve in a direction, toward one or another style of adaptation. "Pressures" and selective processes are in constant operation, so that evolution is continuous. ~~Such pressures may be disease~~, or ability to find food, etc. ~~Many of th~~ The directions of human evolution today seem ~~to evolve~~ to be in the composition of the blood, although the types of pressure are not entirely understood.

Insert 8A

The remarkable thing about the species living to day is that all of them have continuously, since the beginning of life, had a history of just enough adaptations to survive in ~~xx~~ all the changing environments ~~they were~~ to which they were exposed. And all the extinct ~~animals~~ species did not.

8A

INSERT

Such pressures may be disease (to which some are immune,) a new food source (to which some may adapt,) new ~~moveme~~ abilities (flying a little, instead of flapping and hopping.)

The variation which permits species to adapt is natural. Some of it ~~also exist~~ is random variation in a population, like hair-color in European peoples. Some of it is systematic variation — in certain areas, for ~~instea~~ instance, the bears get larger as you move North. Some of it is mutation — shift in the genetic code itself. Most mutations die or are born dead, but a very few "have something" that their forebears did not, or a little more of something.

that

8A

INSERT

Such pressures may be disease (to which some are immune) a new food source (to which some may adapt) new ~~[illegible]~~ abilities (flying a little, instead of flapping and hopping.)

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Unless there is a niche, or way of survival, into which a species can move by slight and possible modification, it will end.

There is some confusion about the way we talk about species. To say a creature is "primitive" does not mean it has stood still in evolution.

For instance, the bat is said to be more "modern" than the dragonfly, even though they are both 20th century creatures. What this means really is that a living species has maintained certain characteristics that creatures closely related to it had long ago. It may even be indistinguishable from the fossils, but that does not mean it is just the same. It means that circumstances have tended to damp, or restrict, changes away from this basic type in the breeding stock, or even return to the type when deviations are slight. The cockroach is one of these. Similarly, to say a species is more 'closely related' to its early ancestors than another species means that in certain respects it has kept features of theirs that have been lost by other descendants. ~~Thus the platypus is more primi~~ The platanistids, "primitive" fresh-water dolphins are like this, and were evidently not adapted to the changing seas.

To say a creature is "more primitive" may also mean that it has not proceeded toward certain specially effective and rather elegant developments-- the four-chambered heart, for instance, or the advanced brain.

Finally we are ready to talk about whales, the order
cetacea. ~~x~~ There are about a hundred species/in the cetacean order,
~~w/There are about a hundred species/of whales,~~
~~Finally we are ready to talk a little about whales~~/ The
divided into One is
~~cetacean order is~~ has two major suborders,/the m~~l~~ysticeti, which have few teeth proper and "sieve" tiny shrimp and plankton from the sea. These animals are all large, the smallest species averaging around thirty and f~~r~~orty feet long as adults. The largest creature on earth, the blue whale balaenop~~e~~tera physalus (sometimes a hundred and thirty) feet long,) is a mysticet~~e~~i. The other are the carnivorous odontoceti, or tooth~~w~~ed whales. The largest of these is the sperm whale, ~~xdxx~~ ~~physet~~ Physeter catodon. P. catodon is hunted for the oil from its colossal head and the ambergris that cakes up in its stomach; it apparently lives exclusively on giant squid dredged from the bottom of the ocean.

Most of the odontocetes are smaller, though, and at a certain size ~~w~~-- around twenty feet -- we stop calling them whales, because everybody knows whales are great big things. Below this size they are called dolphins or porpoises.

Note that the distinction between dolphins and porpoises is in the English language. It ~~is~~ does not very a division correspond to in scientific ter~~x~~minology; it is not a/considered very important distinction biologically. Still, ~~xxx~~ most scientists agree in giving it a precise meaning. By convention, "porpoises" are/~~xxxxxxxxx~~ odontocetes with a blunt head and spade-shaped teeth; "dolphins" are odontocetes ~~xxxx~~ with conical teeth and a long snout. Not a/long nose; the nose is just a hole on top of the head, that closes with a movable plug of flesh.

(are teeth what count? Risso's dolph.~~x~~ has blunt head. Is it dolph.?)

(Label 1)

THANK YOU FOR YOUR INTEREST
in the COMMUNICATION RESEARCH INSTITUTE

We believe this brief pamphlet may fill you in on your questions about dolphins. There are ~~also~~ further readings suggested at the end; in addition, you may find encyclopedia articles to be helfpful.

(Label 2)

. . .

We think this may ~~fill~~ answer your question~~s~~ on the difference between dolphins and porpoises.

Since we are a research organization, we cannot make detailed replies, and suggest that for further information you inquire at ~~zoos, museums or in~~ ~~natur~~ nature museums, libraries or even zoos that have biologists to answer questions...

07.81

'Less advanced' –
~~'Primitive' in type~~ –

a ~~term~~ often encountered –
means, not that a species has ~~not~~ ~~est~~ stood still, but rather that it has ~~proceeded~~ not proceeded toward certain speci[illegible] effective and rather elegant ~~solutions ..~~ and developments — the four-chambered heart, for instance, or the advanced brain.

'COSMOPOLITAN' –
e.g. being omnivorous
or intelligent

Evolve to meet particular local circumstance, then become general & "cosmopolitan."

0720

O&P

Ev. 9&10

The ~~[illegible]~~ fabulously complex genetic pattern ~~of each~~ of a given species at a given time does ~~not~~ change. { changes only a little at a time

~~Pressures~~ ~~[illegible]~~ and selective processes in ~~constant~~ operation.

0712

A big cetacean is called a whale. A little cetacean is called a dolphin or a porpoise, unless it is going to grow up to be a big cetacean, ~~in which case it is a baby whale, or calf.~~

Then we call it a baby whale. Actually, it is usually called a "calf." Certain bovine terms are often used with cetaceans: adults are called bulls and cows, babies are calves. ~~However, this is not carried too far. a group of medium-sized group of cetaceans is usually called a pod, and nobody ever refers to whale heifers.~~ But there are no whale "heifers," and a group of ~~whales~~ cetaceans is usually called a pod.

It should be noted, then, that terms like "dolphin," "porpoise" and "whale" are customarily used to delineate categories and make distinctions that are not of great biological importance.

The main systematic terms are the Latin ones within the Linnaean system, which dismay to the beginner and often run away from the scientist when other scientists get to work ~~on them~~.

ELSEWH.

However, the terms of natural language can often be put to good use by scientists if they are whittled to fit a purpose in a careful way.

Norman and Frazer[x] did just such a thing in 193_ when they fixed the distinction between "dolphin" and "porpoise." The difference they settled on was this: the dolphin has a long beak, or jaw, and the porpoise does not; the dolphin has conical teeth, the porpoise has

~~The word "cetacean" ~~xcetaxxxxx~~ (pronounced, setayshun,) is a group of mammals, like "rodent" or "marsupial," who live in the water and have their noses on top of their heads.~~

~~p~~ Presumably the reason little ones are not called "whales" is that everyone knows whales are big. There is no important biological reason for distinguishing between big and little cetaceans and big cetaceans. (Size is a fast-changing evolutionary variable.)

(Odonto-mysticete distinction.)

100 species: Narwhals, Cuvier's Whale, Risso's dolph.

We have wandered a lot from quex of dolfs & por's...

Teeth are considered important by the biologist because evolution modifies them rather swiftly when there is pressure on a group of animals to change in some direction.

Hence biologists look at the teeth of a specimen closely, as ~~it helps~~ they help reveal a species' adaptations, origins, and, in many cases, the cleavages among species.

Having expended some space on the more important taxonomic categories, let x us now look xgxtx at the question of the difference between dolphins and porpoises.

This is a distinction that does not cut along any major taxonomic lines...

The classic distinction was clarified by Norman and Fraser...

Note that the Latin names of the creatures, and their (not wholly known) Systematics, are what really count. But...

D&P 0/L

Cetaceans; their Types
DOLPHIN & PORPOISE. THEIR PICTURES.

ETYMOLOGY & Terminological boggles

Captivity / gregariousness; utterances

Suggested reading.

Slijper, Whales. (Pub. , year, price.) An all-around text on all facets of cetology, ~~of whaling~~ on a college or advanced high-school level.
~~of~~

------, "Revolution in Biology." American Scientist ..... (1963.)
This article, though ~~high it may look very technical,~~ quite technical, embraces ~~a large number of~~ and summarizes a large number of topics in modern biology, ~~especially with~~ including "balances" of genetics and evolution.

Romer, Man and the Vertebrates, ... This book, ~~looks at all~~ on a high-school level, treats all the vertebrates together, examining their different solutions to the problems of existence.

DEP

19

Due to false etymology

Incidentally, the whimsical coinage of porpi ~~?~~ as the plural of "porpoise" is neither original nor correct. "Porpoise" is not from any Latin word *porpus ~~(the asterisk~~ but rather from provincial French, porc-poisson meaning "pig-fish" (or perhaps "herring-hog" or [illegible]

(in [illegible] they call them

* the asterisk is used by linguists to show that a word is uncertain or mythical.

0712

set up to
~~which~~ handles a good deal of scientific bookkeeping.

The Linnaean system of naming, which seems so inconvenient to the layman, is in fact a brilliantly contrived ~~system~~ scheme of classification. By the use of Linnaean names, it is possible to designate exactly what kind of creature~~s~~ you have in mind, even ~~xxxx~~ where ordinary language makes no ~~distinction~~ distinctions.

The system can be brought up to date as scientists ~~get better~~ obtain better information on the way species are related.

In order for the system to work, ~~natural~~ living nature has to be set up in ~~xx~~ a certain way: one

there have to be natural groupings which do not overlap in irregular ways-- e.g., mermaids.

The system provides for specifying a creature ~~according to~~ ~~speci~~ within successively larger categories. Thus the reader...

~~But~~ It must be recognized, though, that the Linnaean system is not just a system of naming, but a discovered natural order in the world. The system reflects, and makes use of, the hierarchical division of all life into ~~types~~ related types; this in turn reflects their common origins.

A species~~an~~'s a population of creatures who can interbreed. ~~A~~
A species must always be able to make a living, or the whole species will die out forever. somehow while its natural variations-by-accident probe for new means of adaptation.

Sometimes a species loses its many means of livelihood, but is versatile enough to ~~carry a reprieve by living or~~ scrape by ~~other food or~~ by other means. ~~[illegible]~~ In time it may evolve to new methods and powers, ~~something more suitable~~, but The only way is for ~~when~~ an accidental variation gets passed on by heredity.

The inventions ~~xx~~ that have been achieved by these mechanisms of nature are diverse and wonderful, as you can tell by a walk through the zoo or the woods.

Incidentally, the whimsical coinage of

porpi as the plural of "porpoise" is

neither original nor correct. "porpoise" is not from

any Latin word "porpus" ~~[illegible]~~

but rather from probably French, porc-poisson

"pig fish" [illegible] perhaps "hog-fish" [illegible]

[illegible] by linguists to claim that a word is mythical

CRI
Dolphins vs Porpoises
(intermediate) LONG DRAFT

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